

NOTES FOR STUDENTS

Flora of southern Illinois.—In analyzing the elements entering into the flora of the southern portion of the state of Illinois, PALMER⁴ distinguishes as the most notable feature the presence of typically southern species which here reach their most northern extension. This southern element he regards not as a recent invasion, but as the remnants of a more numerous aggregation that existed here in the remote past. These species, therefore, are not extending but rather restricting their range. Two floristic formations are distinguished and named the Cairo and Mounds formations, from the towns about which they center. The former dominates the rich soils of the Mississippi and the Ohio River flood plains formerly covered with rich forests. Among the common tree species are *Taxodium distichum*, *Nyssa aquatica*, *Gleditsia aquatica*, *Fraxinus profunda*, *Liquidambar styraciflua*, *Quercus lyrata*, *Betula nigra*, *Carya laciniata*, and many others. Among the herbaceous plants may be mentioned *Hottonia inflata*, *Triadenum petiolatum*, *Dianthera ovata*, *Spilanthes americana*, and *Mikania scandens*. The Mounds formation reaches its best development upon some low hills with gentle slopes of Cretaceous age. Its typical trees are less distinctively southern, and include such species as *Carya glabra*, *Quercus Muhlenbergii*, *Q. velutina*, *Q. Schneckii*, *Liriodendron tulipifera*, *Cercis canadensis*, and *Acer saccharum*. Upon the lower elevations the trees are large and tall, while upon the poorer soil and greater elevations of the Ozark hills not only is there a decrease in size, but there is a greater predominance of oaks and hickories, such as *Quercus velutina*, *Q. alba*, *Q. stellata*, *Carya glabra*, *C. ovalis*, and *C. alba*.

The report concludes with a list of woody plants collected. This includes not less than twelve species and varieties of *Carya* and fifteen species and eight hybrids of *Quercus*.—GEO. D. FULLER.

Seasonal changes in carbohydrates—MITRA⁵ has recently published a paper on seasonal changes of carbohydrate materials in apple seedlings. Analysis has been made on one- and two-year old stems and roots and on fruit spurs, for the determination of the amount of starch, sucrose, maltose, glucose, and total sugars at intervals of fifteen days during the year. Some determinations of acidity in autumn, winter, and spring have also been made. Starch reaches its maximum amount in one- and two-year old apple stems in October and November, with a secondary increase in June. The same is true of roots. Total carbohydrates show a similar curve, reaching 44 per cent in winter. Total and reducing sugars in one- and two-year old stems and in roots increase in January and March. The author finds an increase in acidity in November,

⁴ PALMER, E. J., Botanical reconnaissance of southern Illinois. Jour. Arnold Arboretum 2:129-153. 1921.

⁵ MITRA, S. K., Seasonal changes and translocation of carbohydrate materials in fruit spurs and two-year old seedlings of apple. Ohio Jour. Sci. 21:89-103. 1921.